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into two images; the ordinary ray from one is superposed on the extraordinary ray from the other, and the compound beam so produced is examined further. The means adopted to effect the desired object are, however, very different, being much simpler in my method, whilst the results are superior.

In Jamin's photometer the light which eventually reaches the eye is comparatively feeble, and the field of view is very restricted; the objects themselves under comparison are seen direct through the instrument without the interposition of a telescopic arrangement, and no means are taken to prevent extraneous light from entering. The deficiency of light makes observations by artificial light difficult, whilst when examining objects illuminated by diffused or direct sunlight the eye is fatigued and bewildered by the variations of shape, size, and colour assumed by the overlapping objects seen through the instrument. In the photometer described in the former part of this paper, there is abundance of light, and the observation is made upon two luminous disks, which are magnified by means of a lens, so as to appear close to the eye. It will be found much easier to detect differences of colour between these two adjacent disks than to observe the presence or absence of the coloured fringes in the central portion of the field of Jamin's photometer. In the former case the eye has nothing to observe but two uniform and purely coloured disks, changing from red-green to green-red through an intermediate stage of neutrality; in the latter case the eye has to detect the stage of neutrality in the central portion of the field, where the two images under comparison overlap, the attention being distracted, and the sensitiveness of the eye weakened, by the brilliantly coloured fringes which cross the adjacent objects.

A direct comparison of the two instruments for sensitiveness shows that the present photometer will detect much more minute differences of intensity than Jamin's will, whilst it will work with tolerable accuracy in a light too feeble to give any results with the latter instrument.

April 8, 1869.

Lieut.-General SABINE, President, in the Chair.

The following communications were read:—

- I. "Preliminary Notice on the Mineral Constituents of the Breitenbach Meteorite." By Professor N. STORY MASKELYNE, M.A. Communicated by Professor WARINGTON W. SMYTH, F.R.S. Received March 2, 1869.

This meteorite, which belongs to the rare class intermediate between meteoric irons or siderites and meteoric stones or aërolites (a class to

which I applied some years since the term siderolites), was found in Breitenbach in Bohemia.

It is a spongy metallic mass, very similar to the siderolite of Rittersgrün in Saxony, the hollows in the iron being filled by a mixture of crystalline minerals. These minerals are two in number; and the present notice deals with these two minerals.

1. One of them is of a pale-green colour, crystallizing in the prismatic system, and presenting at once the formula of an augitic mineral and a crystalline form nearly approximating to that of olivine. Dr. Viktor von Lang, when my colleague at the British Museum, measured some merohedral crystals of this mineral, and obtained for its elements

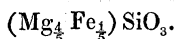
$$a : b : c = 0.8757 : 0.8496 : 1,$$

$$\begin{aligned} 110.010 &= 44 \frac{8}{11} \\ 101.100 &= 41 \frac{11}{11} \\ 104.100 &= 74 \frac{3}{11} \\ 011.010 &= 40 \frac{16}{11} \end{aligned}$$

The analysis of this green mineral gave, from 0.4127 grm.,—

		per cent.	Oxygen-ratios.	Equivalent ratios.
Silica	0.2315	56.101	29.920	1.87
Magnesia	0.1247	30.215	12.087	1.51
Ferrous oxide	0.0560	13.583	3.018	0.37
	0.4122	99.899		1.88

results which correspond very nearly with an Enstatite of the formula



The specific gravity is 3.23.

It is remarkable that of the minerals presenting the general formula



where M stands for one or more metals of the calcium and magnesium groups, we are acquainted with two anorthic types (Rhodonite and Babingtonite); three oblique types, those, namely, of Wollastonite, of Hornblende, and of Augite; two prismatic types, those, namely, of Enstatite and Anthophyllite, homœomorphous with the oblique Augites and Hornblendes; and to these we shall have now to add (if the measurements of Dr. Lang shall prove to be distinct from those of Enstatite) a third, in the green mineral under description.

Of these, the prismatic types are essentially those of the magnesian group. The rest, with the exception of the calcium silicate (Wollastonite), are types belonging to the mixed groups.

2. The other mineral is one of very great interest. It is, in short, silica crystallized in forms and in a system distinct from quartz, and pos-

sibly is tridymite. In bulk it forms about a third part of the mixed crystalline mass.

The crystals are very imperfect, and are twinned: but there are two cleavages parallel to the planes of a prism of about 119° ; and, on looking through a plane that is perpendicular to this zone, it is seen that the crystal is biaxial. The normal to this plane is parallel to the second mean line, the optical character being negative.

A section made for examination in the microscope showed two small crystals in which light traverses the section with equal brilliancy during its rotation between crossed Nicol prisms. This, and possibly a similar case recorded by Vom Rath, seems to result from the section being cut parallel to a composite portion of the crystal.

The analysis of the mineral gave, by distillation of the silica as silicic difluoride, and subsequent determination as potassic fluosilicate, 97.43 per cent. of silica, the remainder being oxide of iron and lime. Thus 0.3114 grm. gave:

		per cent.
Silica	0.3034	97.43
Ferric oxide	0.0035	1.124
Lime	0.0018	0.578
	<u>0.3087</u>	<u>99.132</u>

A second analysis gave 99.21 per cent. silica, 0.79 of residue.

Its specific gravity, as determined from a very small amount of the mineral picked under the microscope, was 2.18; a second determination made on a larger amount gave the value 2.245. That of tridymite is 2.295 to 2.3. This may be taken as evidence that the mineral is not quartz, the specific gravity of which is 2.65. Vom Rath's experiments were made on a rather less pure form of tridymite.

There can be no doubt from these results, further details of which shall be shortly laid before the Society, that this mineral is silica in the form of its allotropic condition and lower density. It may possibly be the mineral to which Vom Rath has given the name of Tridymite; the crystalline system, however, of Tridymite, as given by Vom Rath, does not accord with the above facts.

II. "On the Derivatives of Propane (Hydride of Propyl)." By C. SCHORLEMMER. Communicated by Prof. STOKES, Sec. R.S Received March 5, 1869.

At the time when I commenced this investigation, the existence of normal propyl alcohol was very doubtful. According to Chancel*, this body is found in the fusel-oil from the marc of grapes; but Mendeleeff† tried in vain to isolate it from a sample of this oil which he had obtained

* Compt Rend. vol. xxxvii. p. 410.

† Zeitschrift für Chemie, 1868, p. 25.